

CPPR Briefing Paper

**ANALYSIS OF SCOTLAND'S PAST AND
FUTURE FISCAL POSITION**

**Reflections on GERS 2013, the Scottish
Government's Oil and Gas Analytical Bulletin and
the 2013 UK Budget**

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Executive Summary

This Briefing Note uses a variety of recently released UK and Scottish Government related documents to review Scotland's future fiscal balance – public sector revenues minus expenditures - both in absolute terms and relative to the UK.

Scotland's Fiscal Balance excluding Oil & Gas

The importance of Scotland's non-oil or "mainland" fiscal balance (ie, excluding the off-shore oil and gas region) is highlighted in the recent Fiscal Commission's report, which states that, in managing Government spending plans, *"A long-run objective should still be to achieve as close to an overall onshore budget balance, and to use at least a proportion of North Sea revenues to invest for the long-term balance."*

Scotland's mainland, or onshore, fiscal balance has been in deficit since at least 1980. Over the period 2007-08 to 2011-12, this deficit was between 10-18% of GDP. As such, Scotland has a noticeably higher fiscal deficit than the UK, by around an extra 5½ - 6½ % of GDP.

In the future Scotland's deficit is projected to decline but the gap, relative to the UK, is likely to remain.

Scotland's Fiscal Balance including Oil & Gas

Scotland's overall net fiscal balance position changes dramatically once a geographic share of North Sea oil and gas revenues is added in to the equation. Historically, it meant Scotland had a very large absolute fiscal surplus throughout the 1980s and a much smaller one in 2000-01 (see Figure A1 in Annex 1). More recently, (i.e. in the last four years), whilst Scotland has continued to run a fiscal deficit, it has been a relatively smaller one than the UK's. In the latest year available, 2011-12, GERS 2013 shows this relatively better Scottish position to be equivalent to 2.9% of GDP.

Latest projections for North Sea revenues by the Office for Budget Responsibility (OBR) suggest that all of the Scottish advantage seen in 2011-12 disappears by 2012-13, as oil revenues are projected to fall by over 40%. Thereafter, an initially small, but growing, relative advantage is projected to emerge for the UK.

This is by no means the only possible outcome. The Scottish Government recently outlined four additional North Sea revenue scenarios based on varying oil prices and production levels, each of which results in higher North Sea tax revenue projections than those of the OBR (see Box 1). The impact of these oil revenue scenarios is to make Scotland's fiscal deficit relatively smaller (as a % of GDP), although in only one scenario does Scotland's fiscal balance end up being better than the UK's by 2017-18 (see Table 5). However, these alternative scenarios are based on a variety of assumptions, many of which are open to debate.

North Sea Oil & Gas issues

The five Scottish Government scenarios all depend on a variety of challenging North Sea oil and gas assumptions in relation to the future levels of: production; prices; investment and costs. This results in a very complex equation from which to derive the level of North Sea revenues.

Taking each of these factors into account suggests:

- recent large reductions in North Sea tax revenues reflect, in part, higher production costs and lower production levels
- tax revenues in the near future will not only be affected by potentially higher production and higher sterling prices, which are revenue-enhancing, but also by potentially higher, but revenue-reducing, tax deductible investment
- the rising levels of investment reflects both rising prices and the rising cost of extracting oil and gas in the North Sea
- currently, there are plausible examples of longer term forecasts of oil prices which are around or below those used by the OBR eg, Norwegian Central Bank, OECD/IEA
- the OECD uses a long term declining oil price (in real terms) based on the impact of preventing long-term global temperature rises which is consistent with the Scottish Government position in this area

As a result a more viable range of scenarios for the Scottish Government to consider for planning purposes is likely to incorporate the Scottish Government's Scenarios 1, 2 and 4 (as highlighted in Box 1 and Table 5).

Assuming a cautious oil price for public expenditure planning purposes would be consistent with the Fiscal Commissions view that: *“An attractive approach in the short-term would be to plan the government's spending plans on the basis of a cautious forecast of oil revenues produced by an independent fiscal commission.”*

Even if North Sea revenues turn out towards the top of the range projected in the Scottish Governments Oil & Gas Analytical Bulletin, it would not mean a return to anything like the level of revenues seen in the early 1980s (see Figure 1).

Many of the key factors determining North Sea revenues will remain outside the control of a future Scottish Government, as they are currently for the UK Government.

The variability of oil prices, investment, operating costs and production levels, means that the projections shown in the Briefing Note should be read as indicative only. However, this only adds to the need for greater analysis of, and clarification of, existing arrangements and any alternatives to these arrangements, in order to help voters assess the pros and cons of independence leading up to the referendum vote on September 18th 2014.

The North Sea will continue to be a very valuable resource for any economically independent Scotland. However, its management remains a key issue in terms of ensuring fiscal stability. As the Fiscal Commission recommends, in the long term Scotland should aim for an onshore budget balance and allow most, or all, oil and gas receipts to be saved in an oil fund. At present we remain some way from understanding how this might be achieved.

1. Introduction

This Briefing Note considers the linked implications of data contained in a number of recent government publications on Scotland's future fiscal balance¹. The publications of interest are: the latest edition of the 'Government Expenditure and Revenues for Scotland' (GERS)²; the Scottish Government's new 'Oil and Gas Analytical Bulletin' (OGAB); and the latest Economic and Fiscal Outlook (EFO) by the Office for Budget Responsibility (OBR) that supports the UK Government's 2013 Budget Report.

The Note is split as follows:

- First, we assess Scotland's fiscal balance excluding oil and gas revenues, i.e., its mainland, or onshore, fiscal balance;
- Secondly, we look at the impact on Scotland's fiscal balance of adding in potential North Sea related, offshore, oil and gas tax revenues;
- Thirdly, we address a number of issues that will have an influence on future North Sea tax revenues;
- Fourthly, we consider the possibility of an oil fund as a means of coping with erratic oil and gas tax revenues
- Fifthly, we look at what potential may exist to close the fiscal gap without North Sea tax revenues; and,
- Finally, we conclude with some recommendations to improve future analysis.

Throughout, this note concentrates on:

- The overall fiscal balance (i.e. including capital expenditure) for the UK and Scotland rather than the current balance, as the former reflects better the international measure that is typically used in this area of analysis;
- Scotland's fiscal balance including its geographic share of North Sea revenues (currently 94% of the UK total), when appropriate. The geographic share is the one most commonly used by commentators, although GERS also shows Scotland's fiscal balance including its population share of North Sea revenues (8.4%).

The results, especially the projections, are affected by difficulties in forecasting North Sea variables. Not only are North Sea revenues difficult to predict, for reasons discussed later, but so too is the output (Gross Domestic Product (GDP)) relating to the North Sea. The latter can have a significant impact on Scotland as it currently constitutes about 18% of Scottish GDP. Since the fiscal deficit is often shown as a % of GDP this has a knock on impact on results³.

¹ The fiscal balance is the net financial position of the government after gross expenditure is taken away from gross revenues, i.e. if gross revenues are greater than gross expenditure then there is a fiscal surplus, if expenditure is greater than revenues then there is a net deficit.

² Annex 1 also looks at the results from the latest GERS 2013 in more detail.

³ A further complication is introduced when Scotland's 'true' output position is taken into consideration. As much of the North Sea operations are owned by overseas companies, a truer measure of national output is Gross National Product (GNP) rather than GDP. However, no such measure currently exists for Scotland. Using GNP would lower the output measure and so increase Scotland's deficit as a % of economic output.

2. Scotland's Fiscal Balance excluding Oil & Gas

2.1. Historic position 2007-08 to 2011-12

Scotland's mainland net fiscal balance (i.e. excluding the off-shore oil and gas region) is in deficit⁴, something that has existed since at least 1980. GERS 2013 shows that for the financial years 2007-08 to 2011-12, this deficit amounted to between 10-18% of GDP. As such, Scotland has a noticeably higher fiscal deficit than the UK, by around an extra 5½ - 6½ % of GDP.

Table 1, along with subsequent tables, shows the fiscal balance for Scotland (i) in cash terms (£, billion) and (ii) as a % of GDP. The latter measure allows for a clearer comparison of the relative size of these balances and this is made explicit in the final row which shows the degree to which Scotland's fiscal deficit is higher/lower than the UK's.

The cause of Scotland's relative deficit vs the UK is that while Scotland's contribution to overall UK revenues is about in line with its population share (8.2% vs its 8.4% share of the UK population), its share of public sector expenditure (9.3%) is well above its population share.

Table 1: Scottish and UK mainland fiscal balance, £billion (nominal prices) & % of GDP

	2007-08	2008-09	2009-10	2010-11	2011-12
Scotland					
1 Balance exc North Sea revenues	-11.1	-15.5	-20.4	-19.7	-18.2
2 Balance exc North Sea as a % of GDP	-9.7%	-13.4%	-18.1%	-16.5%	-14.6%
UK					
3 Balance exc North Sea revenues	-44.2	-110.4	-165.4	-149.8	-132.3
4 Balance exc North Sea as a % of GDP	-3.2%	-7.9%	-11.9%	-10.3%	-8.8%
5 Scotland minus UK as a % of GDP (2-4)	-6.5%	-5.5%	-6.2%	-6.2%	-5.8%

Sources: GERS 2013

The reason that Scotland's mainland balance is of particular interest is highlighted in the recent Fiscal Commission report⁵. This states that

“A long-run objective should still be to achieve as close to an overall onshore budget balance, and to use at least a proportion of North Sea revenues to invest for the long-term balance.”

What the Commission appears to be arguing is that by saving the financial benefits of a non-renewable commodity, oil, the Scottish Government will then be able to share these benefits over a much longer timescale and with more than the current generation. This is a similar approach to that taken by the Norwegian Government.

Whilst the ideal outcome may be to save most of the tax revenues from the North Sea in an Oil Fund, due to the worldwide economic problems, Scotland is currently some way from

⁴ See Scottish Governments SNAP tables on historical fiscal balance calculations.

⁵ See Scottish Government, 2013, Fiscal Commission Working Group: First Report – Macroeconomic Framework

being able to rely solely on its non-North Sea tax revenues to support its current public expenditure commitments. Of particular interest, perhaps, is that when mainland UK had a relatively small deficit (i.e. -3.2% of UK GDP), as recently as 2007-08, mainland Scotland had a decidedly bigger deficit (-9.7% of Scottish GDP).

2.2. Projections to 2017-18

Even if the absolute deficit of both countries continues to decline, this relative Scotland-UK position is not expected to change much in the current spending review period (i.e., to 2017-18). Table 2 shows our future projections of the mainland fiscal balance for Scotland and the UK to 2017-18 (see Annex 2 for more details on the methodology used for making these projections).

Table 2: Scottish and UK mainland fiscal balance, £billion (nominal prices) & % of GDP

	2012-13*	2013-14	2014-15	2015-16	2016-17	2017-18
Scotland						
1 Balance exc North Sea revenues	-17.6	-17.3	-16.5	-15.7	-13.7	-12.2
2 Balance exc North Sea as a % of GDP	-14.0%	-13.3%	-12.2%	-11.2%	-9.3%	-7.9%
UK						
3 Balance exc North Sea revenues	-121.0	-114.4	-103.4	-91.8	-65.6	-46.4
4 Balance exc North Sea as a % of GDP	-8.0%	-7.3%	-6.4%	-5.4%	-3.7%	-2.5%
5 Scotland minus UK as a % of GDP (2-4)	-6.0%	-6.0%	-5.8%	-5.8%	-5.6%	-5.4%

Sources: OBR EFO, March 2013; CPPR

* Note - the impact of the one-off £28 billion adjustment to Royal Mail pension fund has been excluded from 2012-13 in this, and all following tables, in order to present a clearer and more consistent, cross-year, comparison.

3. Scotland's Fiscal Balance including North Sea oil & gas revenues

3.1. Historic position 2007-08 to 2011-12

Scotland's overall net fiscal balance position changes dramatically once a geographic share of North Sea oil and gas revenues is added in to the equation. Table 3 below illustrates the position up to 2011-12, taken from the latest GERS 2013 report.

Table 3: Scottish and UK fiscal balance including the North Sea, £billion (nominal prices) & % of GDP

	2007-08	2008-09	2009-10	2010-11	2011-12
Scotland					
1 Balance inc North Sea revenues	-4.0	-3.7	-14.5	-11.7	-7.6
2 Balance inc North Sea as a % of GDP	-2.9%	-2.6%	-10.7%	-8.1%	-5.0%
UK					
3 Balance inc North Sea revenues	-36.7	-97.5	-158.9	-141.0	-121.0
4 Balance inc North Sea as a % of GDP	-2.6%	-6.9%	-11.2%	-9.5%	-7.9%
5 Scotland minus UK as a % of GDP (2-4)	-0.3%	+4.3%	+0.5%	+1.4%	+2.9%

Sources: GERS 2013

This still shows a significant Scottish deficit in each year, but one that is relatively smaller than the UK's for the last four years. For two of these years, 2008-08 and 2011-12 this Scottish advantage is considerable, and relates to high oil and gas related revenues in both years.

3.2. Projections to 2017-18

Looking into the future, this relative advantage will shift but how it shifts depends on the fortunes of the North Sea, which is difficult to predict with certainty.

As the Scottish Government's welcome new addition to the economic landscape - its Oil and Gas Analytical Bulletin - shows, North Sea-related revenues depend on a number of key variables, including:

- the oil (in dollars) and gas price⁷
- the £/\$ exchange rate
- oil and gas production levels
- the tax regime, including investment and decommissioning allowances
- production and maintenance costs, and hence profitability per £ of output

For each of these variables a range of possible outcomes exists, as each is difficult to forecast with a high degree of certainty, especially over the medium and longer term.

In the past, CPPR has produced projections on the Scottish fiscal balance based on OBR's forecasts of North Sea revenues, a source the Scottish Government has also recently relied on when undertaking similar analysis⁸.

Using this approach, Table 4 below illustrates the position up to 2017-18, incorporating the latest OBR Budget 2013 projections for North Sea tax revenues.

Table 4: Scottish and UK fiscal balance including the North Sea using OBR North Sea tax revenue forecasts, £billion (nominal prices) & % GDP

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Scotland						
1 Balance inc North Sea revenues	-11.5	-10.9	-10.8	-11.3	-9.2	-8.2
2 Balance inc North Sea as a % of GDP	-7.5%	-6.9%	-6.6%	-6.6%	-5.1%	-4.4%
UK						
3 Balance inc North Sea revenues	-114.5	-107.6	-97.3	-87.1	-60.8	-42.1
4 Balance inc North Sea as a % of GDP	-7.4%	-6.8%	-5.9%	-5.0%	-3.4%	-2.2%
5 Scotland minus UK as a % of GDP (2-4)	-0.1%	-0.1%	-0.7%	-1.6%	-1.7%	-2.2%

Sources: OBR EFO March 2013, CPPR

This suggests that all of the Scottish advantage seen in 2011-12 (i.e., +2.9% of GDP advantage over the UK) disappears by 2012-13, as oil revenues are projected to be considerably smaller (down 35% between the two years). Thereafter, an initially small, but growing, relative advantage is projected to emerge for the UK.

⁷ This report focusses on the issues relating to oil prices.

⁸ As was revealed in John Swinney's leaked Cabinet memo of 2012.

3.3. Projections to 2017-18 under Scottish Government oil tax scenarios

This is by no means the only possible outcome. The Scottish Government recently outlined four additional scenarios for oil prices and production that would result in cumulative North Sea tax revenue projections ranging from £41.5 billion (nominal prices) under Scenario 2 to £57.1 billion (nominal prices) under Scenario 5 (see Box 1).

Box 1

Scottish Government illustrative North Sea tax revenue scenarios		£ billion
Cumulative revenues raised between 2012-13 and 2017-18		(nominal prices)
Scenario		
1	OBR Autumn Statement 2012 assumption on oil prices and production levels ⁹	31.3 billion
2	Scenario 1 PLUS average oil price assumptions	41.5 billion
3	Scenario 2 PLUS updated production estimates	48.1 billion
4	Scenario 3 PLUS lower profitability	45.9 billion
5	Scenario 3 PLUS DECC price forecasts	57.1 billion

Source: Scottish Government, 2013, Oil and Gas Analytical Bulletin
DECC = Department for Energy and Climate Change.

All four scenarios results in higher tax revenues than those forecast by OBR and the variation between the highest and smallest projection is £25.8 billion (nominal prices).

Table 5 illustrates the absolute and relative outcomes for Scotland's fiscal balance based on all five scenarios.

The impact of using the alternative, higher oil revenue, scenarios results in (i) Scotland's absolute fiscal deficit being smaller and (ii) its position relative to the UK (calculated as a % of GDP) improving.

Even given this improvement, by 2017-18 Scotland is still in a worse position than the UK in Scenario 2, essentially the same as the UK in Scenarios 3 and 4 and only in the more optimistic Scenario 5 does Scotland end up having a better fiscal balance than the UK (see Table 5)¹⁰.

⁹ Scenario 1 in the Scottish Government's Bulletin was based on the OBR's UK Autumn Statement EFO, whilst the updated equivalent used in this Briefing Note is based on the latest OBR 2013 Budget EFO.

¹⁰ As mentioned in the introduction, North Sea related GDP (which feeds into the output denominator used to calculate the %'s shown in Table 5) is difficult to measure and impacts significantly on Scotland's overall GDP. All scenarios used in Table 5 assume that North Sea GDP remains at 2% of total UK. In the event of a higher price and/or production this share could turn out to be higher. Equally, in the event that prices and/or production falls, this share could turn out to be lower. Sensitivity tests carried out around these central estimates showed that the impact is worth only around +/-0.2% of GDP by 2017-18 and so would not significantly change the results shown here.

Table 5: Scottish fiscal balance including the North Sea under Scottish Government's alternative scenarios, as a % of GDP, and relative to the UK*

	2012-13*	2013-14	2014-15	2015-16	2016-17	2017-18
Scotland						
Scenario 1	-7.5%	-6.9%	-6.6%	-6.6%	-5.1%	-4.4%
Scenario 2	-7.5%	-6.5%	-5.8%	-5.5%	-4.0%	-2.9%
Scenario 3	-7.5%	-6.3%	-5.3%	-4.8%	-3.1%	-1.9%
Scenario 4	-7.5%	-6.4%	-5.5%	-5.0%	-3.4%	-2.2%
Scenario 5	-7.5%	-5.8%	-4.6%	-3.8%	-2.0%	-0.6%
Scotland minus UK as a % of GDP						
Scenario 1	-0.1%	-0.1%	-0.7%	-1.6%	-1.7%	-2.2%
Scenario 2	-0.1%	+0.2%	0%	-0.6%	-0.8%	-0.8%
Scenario 3	-0.1%	+0.4%	+0.4%	0%	0%	0%
Scenario 4	-0.1%	+0.3%	+0.2%	-0.2%	-0.2%	-0.2%
Scenario 5	-0.1%	+0.8%	+1.0%	+0.9%	+1%	+1.2%

Sources: OBR EFO March 2013, CPPR, Scottish Government's Oil and Gas Analytical Bulletin

* Notes: (i) The latest OBR forecast for North Sea revenues (March 2013) for 2012-13 is used in all Scenarios, as most of the actual data is already known. (ii) The North Sea revenue estimates used in Scenario 1 updates those used in the Scottish Governments Oil and Gas Bulletin (which used the OBR's December EFO estimates).

However, some of the scenario assumptions used by the Scottish Government are open to debate and the following section considers further some of the key variables that contribute to the variations in North Sea revenue estimates.

4. North Sea Oil and Gas Key Issues

To help understand the levels of uncertainty underpinning any North Sea tax revenue projections it is worth assessing a number of key issues.

4.1. Investment levels

The latest Oil & Gas UK Activity Survey¹¹ shows investment in the North Sea is at its highest for 3 decades in both nominal and real prices. In 2012, investment amounted to £11.4 billion which is set to rise to over £13 billion in 2013 (nominal prices).

However it is becoming more costly to deliver each new barrel of oil equivalent (boe) with development costs per barrel reported to be 5 times what they were a decade ago. Development costs are rising because there is now a greater need to use more sophisticated, capital intensive techniques to extract hydrocarbons in the maturing North Sea province. As a consequence production efficiency¹² has fallen to around 60%, having been at 80% in 2004.

¹¹ Oil & Gas UK, February 2013, Activity Survey 2013.

¹² Production efficiency refers to how much an asset actually produces compared to its structural maximum production potential (SMPP),

The Brown Field Allowance¹³ announced in September 2012 will help the industry exploit the more expensive fields in the maturing North Sea. However, the industry is also stating that field allowances will need to keep evolving in order to sustain investment and so to develop additional new fields or to justify the extra cost of the more sophisticated technology that will be needed to extend recovery from existing fields.

4.2. Production levels

Production levels in 2013 are projected to fall to 1.45-1.5 mboe per day. In 2010 total production was 2.3 mboe per day, falling to 1.8 mboe per day in 2011 and to 1.55 mboe per day in 2012 (see Table 6).

Table 6: Total oil & gas production (million boe per day)

2010	2011	2012	2013 (est)
2.25	1.82	1.55	1.45-1.50

Source: DECC; Oil & Gas UK

Thereafter views differ on future production levels. OBR use the latest DECC projections of steady annual levels of production at around 1.55 mboe per day.

The latest Oil & Gas UK report states that North Sea production in UK waters could reach 2 million barrels of oil equivalent (mboe) per day by 2017. To reach 2 mboe would represent a substantial bounce back from current levels; up over 30%.

In explaining this rise Oil & Gas UK cite the previously discussed rise in investment and maintenance spend, which is partly aimed at increasing infrastructure integrity to help maintain production from existing fields. Such investment will also help accelerate production from new fields. However, Oil & Gas UK also highlight that should new project start dates slip or infrastructure integrity continue to be a problem, this 2017 date could be delayed or production levels fall short of the 2 mboe per day target. So, the industry itself is highlighting the uncertainty that still exists in predicting even relatively short-term North Sea production levels.

It is worth noting that DECC's projections, which are based on regular detailed updates on reserves and production, field by field, may appear cautious in comparison to those of Oil & Gas UK. Nonetheless even with such detailed field level knowledge, over the last 20 years DECC has consistently over-estimated production levels compared to the final outcome.

Oil & Gas UK is projecting that the additional production it expects to come on stream will help increase tax revenues, with £3 billion additional being estimated for 2017. Given the OBR had access to the latest production information available to help compile its Budget 2013 revenue forecasts, it seems reasonable to assume that this £3 billion has either already been factored in, since contributing fields were approved in 2011 and 2012, or the OBR do not believe such a revenue boost will occur.

Production levels have fallen substantially in recent years; oil and gas production fell 31% alone between 2010-11 and 2012-13. The OBR's latest forecast for oil production (taken

¹³ The term 'Brown Field' refers to more mature oil fields and such allowances are intended to encourage companies to invest in getting the most out of them.

from DECC¹⁴) does not include any bounceback in production levels but it does assume a much slower rate of decline to 2016-17. The exact profile has been made more difficult to predict due to the recent exceptional production losses¹⁵.

Kemp & Stephen (in 2011) describe the OBR's then production projection (which by 2013 was even lower) as "*well below the obtainable potential*". The OBR's current forecast of annual UK North Sea revenues (in nominal prices) range from £6.5 billion (2012-13) falling to £4.4 billion (2017-18), and as such begin to fall below those of Kemp & Stephen, who estimated revenues, "*over the next decade the annual values could be in the £5-10 billion range in real terms*"¹⁶. The upper end of this range is in large part due to projected production rates that are even higher than those currently being predicted by Oil & Gas UK.

4.3. North Sea Taxation

Should oil and gas production increase in future years due to increases in investment, it is important to recognise that this investment will have been encouraged not only by relatively high prices but also by recent changes to the UK North Sea tax regime. Combined, these two effects have improved North Sea profitability for oil companies. As a result, there is no direct one-to-one relationship between higher production, higher prices and higher tax revenues. The complex interplay adds to the challenge in forecasting North Sea tax revenues and emphasises why careful tax planning is required by the UK Exchequer and would be even more important for an independent Scotland.

Given the age and declining profitability of some of the older fields in the North Sea, the Oil & Gas UK Activity Survey also suggests that decommissioning is expected to build up over the next 5 years. An annual decommissioning spend of between c£0.8m-£1bn (real terms), is now expected to affect 40 platforms servicing 80 fields and, by 2040, total decommissioning will have amounted to around £35 billion (2012 prices).

The UK Exchequer's commitment to give certainty on tax relief for decommissioning costs has played its part in encouraging current levels of investment. Any adjustments to these tax breaks would therefore be viewed negatively by the sector and would consequently reduce the economic viability of fields and associated pipeline assets. As a consequence, future tax authorities need to be mindful of the overall impact of any future Budget proposals.

4.4. Oil prices

Oil price projections vary considerably as the Scottish Government's Oil and Gas Analytical Bulletin highlights. However, as well as the higher estimates shown in the Bulletin there are a number of other forecasts where the future oil price is at, or below, the OBR's.

Table 7 illustrates some of these, including short-term prices (ie, to 2017) published by US, Norwegian, OECD/IEA (International Energy Agency) and UK official sources. The trend in each of these cases is for a relatively slow decline to 2015 and beyond.

¹⁴ The UK Department for Energy & Climate Change

¹⁵ For example, in their latest annual report (February 2013), Oil & Gas UK argue that North Sea output could experience "*a significant upturn over the next 3 – 4 years*", due to recent high investment levels.

¹⁶ See, Kemp, Chapter 10, 'Scotland's Economic Future', Reform Scotland 2011.

Table 7: Short-term oil price projections, Brent Blend, \$ per barrel (nominal prices)

	(i) Norwegian Central Bank	(ii) US Energy Information Administration (EIA)	(iii) OECD/IEA	(iv) OBR
2012	112	112	107	112
2013	110	109	99	113
2014	102	101	95	106
2015	97		92	101
2016			90	97
2017			89	93

(i) March 2013, (ii) February 2013, (iii) October 2012, (iv) March 2013

In addition, there is a very long run projection made by OECD/IEA in its World Energy Outlook 2012 publication. This shows three different scenarios, which range from \$100-150 (in 2011 dollar prices) by 2035. The lowest of these (falling to \$100 a barrel) is based on its “450 scenario”, which assumes policy action consistent with preventing long-term global temperature rises by limiting CO₂ emissions.

The Scottish Government’s current CO₂ emission reduction target plan is consistent with this “450 scenario”¹⁷. As such, planning for higher real terms oil prices seems inconsistent with its environmental policy targets.

Looking in more detail at those projections used by the UK Government - the OBR assumes a dollar oil price of \$112 per barrel in 2012-13, falling to \$92 by 2017-18 (see Table 7). By way of comparison, DECC produces low, central and high oil price projections to 2030. Its latest range (from October 2012) was \$105-125 for 2012 and by 2017 this had widened to between \$97-140 per barrel.

The OBR projections are based on the market traded prices at the time of publication whilst DECC’s range is based on what the industry would likely use to plan long-term investment decisions (whilst also expecting the industry to screen for viable investment opportunities at prices well below their longer-term expectations). Meanwhile, the long-term forecasts provided by oil experts Kemp & Stephen, of the University of Aberdeen, use either a \$70 (medium price) or a \$90 (high price) per barrel (real terms)¹⁸.

The Kemp-Stephen price projections differ somewhat from the OBR figures and are more akin to DECC’s “planning assumptions”; projections used to determine what North Sea investment opportunities may be possible and so based on an assessment of the long-term supply and demand fundamentals. The OBR uses current market projections and so are more likely to be influenced by short-term supply/demand fundamentals in the international oil markets.

¹⁷ See Scottish Government publication ‘Low Carbon Scotland: Meeting our Emissions Reduction Targets 2013-2027’, January 2013. In particular Section 1.2 cites the same limiting of global warming to 2 degrees C used in the 450 scenario.

¹⁸ See A.G. Kemp and L. Stephen (2011), The Short and Long Term prospects for Activity in the UK Continental Shelf: the 2011 Perspective, North Sea Study Occasional Paper No. 121, University of Aberdeen

One potential upside benefit could result from sterling continuing to weaken against the dollar¹⁹, in which case additional £-terms revenues would be generated as a consequence.

4.5. Overall implications for North Sea tax revenues and fiscal balance

Taking all of the above factors into account suggests the following:

- Recent large reductions in North Sea tax revenues reflect, in part, higher production costs and lower production levels.
- Tax revenues in the near future will not only be affected by, revenue-enhancing, potentially higher production and higher sterling prices, but also by potentially higher, but revenue-reducing, tax deductible investment.
- The rising levels of investment reflect both rising prices and the rising cost of extracting oil and gas in the North Sea²⁰, both of which are anticipated to be long-lasting.

Taken together these suggest that a more viable range of scenarios for the Scottish Government to consider for budget planning purposes should incorporate their Scenarios 1, 2 and 4.

This view is bolstered by the Scottish Government's commitment to reduced CO2 emissions worldwide, which implies a lower long-term oil price. On this basis these three Scenario results, as shown in Table 5, represent a reasonable range of outcomes, moving from Scotland's fiscal deficit being noticeably higher than the UK's (Scenario 1) by 2017-18, to being about the same (Scenario 4).

In the event that a more optimistic scenario, such as the Scottish Government's current Scenario 5, were to be included in such a range, then a strong case could also be made for an equally pessimistic scenario to be included.

Furthermore, for public expenditure planning purposes assuming a cautious oil price seems the most prudent approach to adopt. As the Fiscal Commission puts it:

“An attractive approach in the short-term would be to plan the government's spending plans on the basis of a cautious forecast of oil revenues produced by an independent fiscal commission.”

It is arguable at present what such a 'prudent' approach might mean for Scotland's fiscal balance. For example, the UK OBR's current forecast might be seen in this light or equally the Scottish Government's Scenario 2 option.

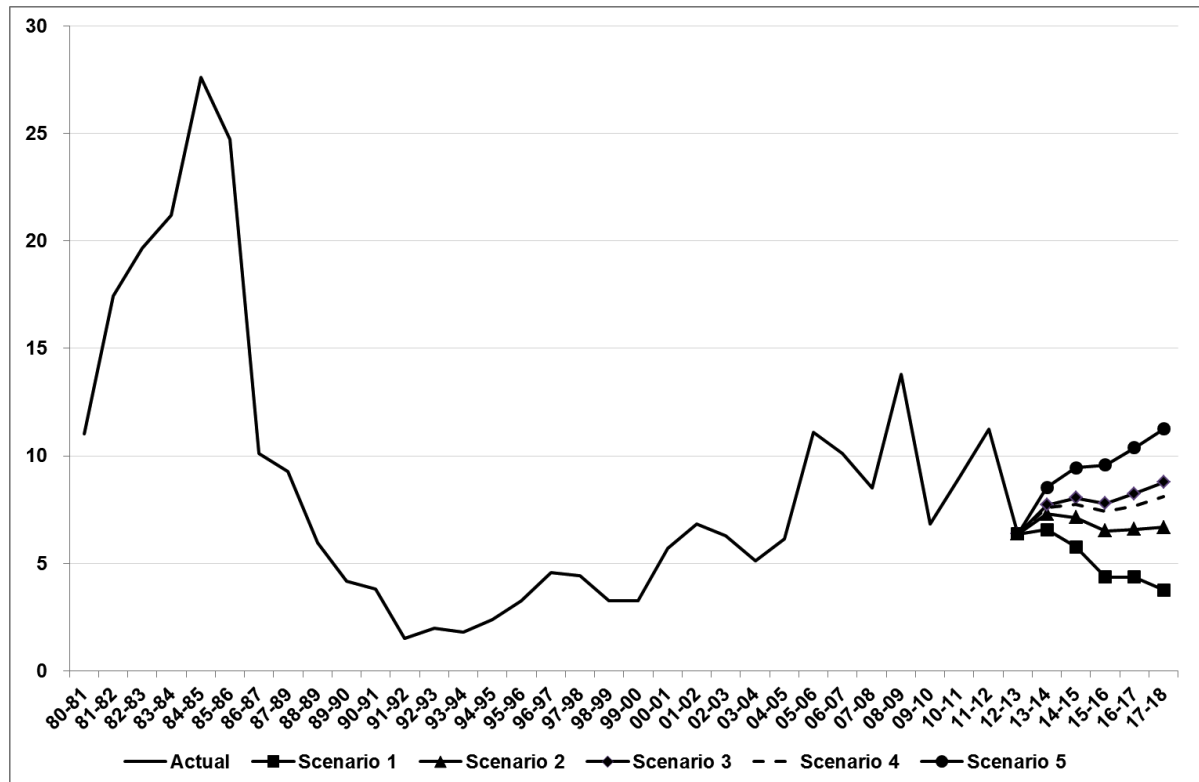
Even if North Sea revenues turn out towards the top of the range projected in the Scottish Government's Oil and Gas Analytical Bulletin, it would not mean a return to anything like the level of revenues seen in the early 1980s. As such, whatever the future holds, to suggest some sort of new oil tax revenue boom is about to emerge is not readily supported by the evidence. As Figure 1 illustrates, under most scenarios, total UK North Sea tax revenues are expected to be flat or falling, in real terms (i.e. adjusting for inflation) and remain well below their 2011-12 level of over £11 billion or to the previous highs seen in the early 1980s of up

¹⁹ Note that the overall effects of continued devaluation are that whilst a weaker sterling produces higher sterling tax receipts, it is also likely to feed through to higher inflation generally, and so eroding the value of Government spending.

²⁰ See Scottish Enterprise, 2013, 'Oil + Gas Strategy 2012-2020'.

to £26 billion. Only by using the most optimistic scenario is there a “bounce-back”, and even then there seems no prospect of returning to the 1980s heyday.

Figure 1: UK North Sea Tax revenues, £ billion, (real prices)



Source: ONS; Scottish Government

5. Creating a Scottish Oil Fund under current circumstances²¹

The recent report by the Fiscal Commission highlighted the attractions of setting up an Oil Fund were Scotland to become economically independent. It also highlighted the difficulty in achieving this when the country remained in a position of significant fiscal deficit. Nevertheless the Fiscal Commission was still of this opinion:

“However, in principle a country could transfer resources to an oil fund based on this approach whilst still being in deficit.”

Indeed the Finance Secretary, John Swinney, suggested just that approach prior to the March 2013 Budget. He suggested that £1.4 billion of Scotland’s £4.4 billion relative surplus²² could have been allocated to a ‘stabilization’ fund in 2011-12 had Scotland been independent.

To illustrate the implications of such an approach in future years, post referendum, it is an interesting exercise to calculate what difference to the deficit the building up of such a fund might make.

²¹ See CPPR’s ‘Briefing Note on recent Oil Fund proposals’, for more detailed discussion of this issue.

²² This refers to the extent to which Scotland’s deficit in 2011-12 was relatively lower than that of the UK. When converted from a % of GDP to £, billion, this equates to £4.4 billion in Scotland’s favour.

Tables 8(a) and 8(b) show the short term impact on Scotland’s fiscal balance using two different assumptions about building up such an Oil Fund, both based on the Scottish Government’s Scenario 1.

- In Table 8(a), £1 billion a year of North Sea revenues²³ is saved, this is in line with an option outlined by Alex Salmond in his 2012 LSE lecture.
- In 8(b), a more conservative approach is taken, in the sense that more is saved, with 50% of North Sea revenues being allocated to such a Fund.

In both cases the remainder of North Sea revenues continues to be used to support Scotland’s annual spending on public services.

Table 8(a): Scotland fiscal balance with £1bn pa Oil Fund, Forecast (£, nominal prices)

	2015-16	2016-17	2017-18
Balance inc North Sea revenues	-12.3bn	-10.2bn	-9.2bn
Balance inc North Sea as a % of GDP	-7.1%	-5.6%	-4.8%

Source: OBR December 2012; CPPR projections

Table 8(b): Scotland fiscal balance with 50% Oil Fund, Forecast, (£, nominal prices)

	2015-16	2016-17	2017-18
Balance inc North Sea revenues	-13.5bn	-11.4bn	-10.2bn
Balance inc North Sea as a % of GDP	-7.8%	-6.4%	-5.4%

Source: OBR December 2012; CPPR projections

Under both scenarios, the fiscal balance is, obviously, worsened, as some revenues that would have reduced the deficit are instead diverted to the new Fund. Allocating 50% of North Sea revenues to an Oil Fund would lead to an initial worsening of Scotland’s deficit by around a further 1 percentage points of GDP. In the longer term, under both scenarios, it is anticipated that such a decline in fiscal fortunes would be offset, to some extent, by increasing interest income from the Oil Fund, depending on the interest return achieved. Clearly such interest income can vary considerably, depending on the state of the world economy (as, like Norway, most of any such Oil Fund will be invested outside of Scotland). In recent times this interest is likely to have been much lower than in pre-recessionary times.

The trade-offs and net benefits of this long run fillip versus a short to medium term penalty would need to be weighed up by those who set up any such fund.

Clearly the impacts of such a Fund would change under the higher North Sea revenue scenarios shown in Table 5.

²³ Note, these assumptions apply, as before, to Scotland’s geographic share of North Sea revenues.

6. Going beyond GERS: Revenue and Expenditure options and faster economic growth

The previous calculations look at Scotland's fiscal balance using a 'static' analysis that could be augmented by a more 'dynamic' one. A more autonomous Scotland could decide to alter the revenue and /or expenditure side of the fiscal equation.

On the expenditure side²⁴, it might amend the size of the budget currently being spent. For example, a more fiscally independent Scotland might choose to reduce its implied share of UK defence spending, with regards to removing any nuclear deterrent and/or scaling up/down conventional armed forces. Another area of UK-led spending is on benefits (pensions, unemployment etc). Again here, a choice could be made to cut, or raise, some of these benefit levels.

On the revenue side, all of the major tax sources (income tax, corporation tax, hydrocarbons tax, VAT etc) would be open to reassessment in terms of the rates at which they are levied.

To help the understanding of just what an independent Scotland's fiscal balance could be, far greater detail on all options is now needed.

The most palatable way of closing any fiscal gap would be for Scotland to achieve higher growth. This would provide Scotland with the opportunity to generate increased tax revenues for funding more public spending (assuming public spend as a share of GDP remains fixed), and/or to allow for a faster reduction in public debt levels. However, it remains unclear what policies would allow for such an increase in the underlying growth rate to come about.

7. Conclusions and Recommendations

This report has illustrated the past and future fiscal prospects of a more fiscally autonomous Scotland, using a number of different scenarios for North Sea oil revenue projections. The importance of North Sea tax revenues in helping support current spending levels is clearly critical.

The potential fiscal balance up to 2017-18 depends on a variety of factors such as: Scotland's share of North Sea and other tax revenues; oil & gas prices; oil & gas production levels; public sector expenditure levels; and tax rates. Many of these would be outside the control of a future Scottish Government, as they are currently for the UK Government.

These fiscal projections imply that under each of the circumstances considered Scotland will, along with the UK, face a difficult period of adjustment in moving away from high, to more manageable, fiscal deficits (or even a surplus).

As has been highlighted already, the available official data on Scotland's public sector expenditures and revenues, and clarity on the preferred future spending and tax raising policies needed to assess the potential pros and cons of greater fiscal autonomy remain seriously limited.

This, together with the variability of oil prices and production levels, means that the projections shown in this paper should be read as indicative only. However, such uncertainty

²⁴ These expenditure changes ignore the possible one-off and on-going expenditure pressures resulting from the need to set up separate Scottish institutions in the event of independence or the on-going loss of economies of scale.

simply increases the need for greater analysis and clarification of the key revenue assumptions being used to determine spending plans, alongside an assessment of the contingencies that may need to be deployed should upside assumptions fail to be achieved. Without such analysis voters will be unable to make meaningful assessment of the pros and cons of independence or greater fiscal autonomy.

The North Sea would clearly continue to be a very valuable resource for any economically independent Scotland. However, its management remains a key issue in terms of ensuring fiscal stability. As the Fiscal Commission recommend, in the long term Scotland should aim for as close to an onshore budget balance as possible and allow all oil and gas receipts to be largely saved in an oil fund. At present we remain some way from understanding how this might be achieved.

The Scottish Government should continue to issue updated versions of its Oil and Gas Bulletin. However, it now needs to make clear its own views on future oil and gas prices, annual production levels, and, ultimately, the North Sea tax revenues likely to be raised to support its projected spending plans.

Ideally, with uncertainty likely to continue to be a feature for both prices and production, these projections could be in the form of a range akin to the fan charts currently used by the Bank of England, with no more than a central forecast being what is used for spending plans.

Annex 1

GERS 2013

Revenue and Expenditure balance from 2007-08 to 2011-12

The net balance between the UK and the Scottish government's total revenues and expenditures (i.e. the fiscal balance) for the five years 2007-08 to 2011-12, are outlined in Tables 9(a) for the UK and Table 9(b) for Scotland.

These show that **including a geographic share of North Sea revenues**²⁵:

- The fiscal balance of both jurisdictions has been negative (i.e. is in deficit) throughout the period 2007-08 to 2011-12;
- Historically, when North Sea Revenues have been relatively low (i.e. in 1999-2000), Scotland's deficit (as a % of GDP) has been noticeably worse than that of the UK, but, not surprisingly, when such revenues are relatively high (i.e. in 2008-09), Scotland's fiscal position is relatively better than the UK's (see Figure A1).

Excluding North Sea revenues, Scotland has a noticeably higher fiscal deficit than the UK, worth around an extra 5½ - 6½ % of GDP (i.e. -14½ % versus -9% in 2011-12).

The main findings of GERS 2013 are:

- Scotland's fiscal balance in 2011-12 has improved, both including and excluding North Sea Revenues, over 2010-11. However, it remains substantially in overall deficit on both measures;
- Scotland's fiscal balance including North Sea revenues (NSR) has improved by more than the balance excluding NSR, as oil revenues bounced back, reflecting a rising oil price;
- For the fourth year in succession Scotland's fiscal deficit, including NSR and as a % of GDP, was smaller than the UK's;
- Scotland's non-oil revenue share in 2011-12 (8.2% of the UK total), remains near its population share (8.4%). However, within this its Income Tax share remains lower (7.4%), while its Corporation Tax (9%) and VAT (8.7%) shares are higher;
- Scotland's public expenditure share in 2011-12 (9.3%) remains above its population share;
- Scotland's geographical share of North Sea revenues in 2011-12 (94%), towards the top of the range seen over the last 5 years (91-95%)²⁶.

²⁵ Scotland's assumed geographic share is used (94% in 2011-12) with regards to North Sea revenues. This is in line with the methodology used by most other commentators e.g. Kemp & Stephen. GERS also shows the fiscal position if a population share (around 8.4%) for North Sea revenues is used.

²⁶ This variation is due to differences in field composition (e.g. gas versus oil), the difference in tax regimes applying to each field, changes in annual and projected hydrocarbon production and finally to the difference in profitability between the fields situated in Scottish and non-Scottish sectors.

Table 9 (a): United Kingdom fiscal balance, Actual, £billion, nominal prices

	2007-08	2008-09	2009-10	2010-11	2011-12
Government Revenues	547.0	533.3	512.6	551.4	572.6
Government Expenditure	583.7	630.8	671.5	692.4	693.6
Balance inc North Sea revenues	-36.7	-97.5	-158.9	-141.0	-121.0
North Sea revenues	7.5	12.9	6.5	8.8	11.3
Balance exc North Sea revenues	-44.2	-110.4	-165.4	-149.8	-132.3
Balance inc North Sea (as a % of GDP)	-2.6%	-6.9%	-11.2%	-9.5%	-7.9%
Balance exc North Sea (as a % of GDP)	-3.2%	-7.9%	-11.9%	-10.3%	-8.8%

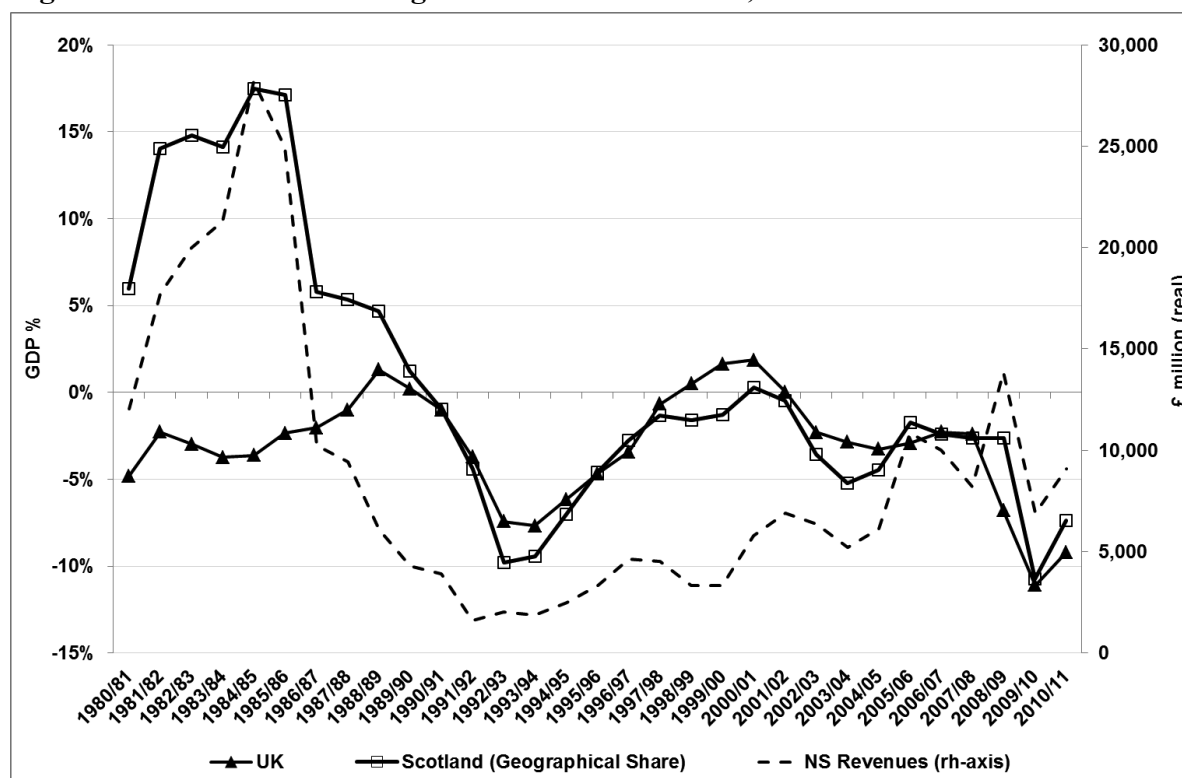
Sources: GERS 2013

Table 9 (b): Scotland fiscal balance, Actual, £billion, nominal prices

	2007-08	2008-09	2009-10	2010-11	2011-12
Scottish Government Revenues	44.8	43.5	41.7	44.3	46.3
Scottish Government Expenditure	55.9	59.0	62.0	64.0	64.5
Balance exc North Sea revenues	-11.1	-15.5	-20.4	-19.7	-18.2
North Sea revenues	7.1	11.8	5.9	8.0	10.6
Balance inc North Sea revenues	-4.0	-3.7	-14.5	-11.7	-7.6
Balance inc North Sea (as a % of GDP)	-2.9%	-2.6%	-10.7%	-8.1%	-5.0%
Balance exc North Sea (as a % of GDP)	-9.7%	-13.4%	-18.1%	-16.5%	-14.6%

Source: GERS 2013

Figure A1: Scotland / UK long-run Net Fiscal Balance, 1980/81 to 2010/11



Source: Scottish Government, SNAP; EIA; ONS

Annex 2

Details on data and calculations for all tables in Annex 1

A. UK

2007-08 to 2011-12

- UK Government revenue, expenditure (TME), GDP (including extra regio) and North Sea revenue totals all taken from GERS 2013
- Extra-regio GDP provided by Scottish Government statisticians

2012-13 to 2017-18

- UK Government revenue, expenditure (TME), GDP (including extra regio) and North Sea revenue totals all taken from OBR's Economic and Fiscal Outlook at the time of the UK Government's 2013 Budget.
- Extra-regio GDP estimated by CPPR as a constant (2%) share²⁷ of UK GDP

B. Scotland

2007-08 to 2011-12

All Scottish Government revenue and expenditure data taken from Government Expenditure and Revenue Statement (GERS) 2013

2011-12 to 2017-18

- Scottish Government revenue total calculated as a constant share (8.2%) of UK revenues (excluding North Sea revenues)
- Scottish Government expenditure total calculated as a constant share (9.3%) of UK expenditure
- GDP (excluding extra regio) calculated using same growth as for UK GDP (excluding extra regio). GDP (including extra regio) estimated by adding on a constant (84%) share of UK extra regio GDP
- North Sea revenue calculated as constant share (94%) of UK total from 2010-11 onwards.

C Oil Fund estimates – 2015-16 onwards

- £1 billion a year going towards the development of an Oil Fund.
- 50% of the Scottish share of North Sea revenues are used to calculate the fiscal balance, with the other 50% going towards the development of an Oil Fund.

²⁷ Note: the constant shares (with respect to extra regio GDP and the Scottish share of UK revenues, expenditure and NS revenue) used for projections post 2011-12 are based on an average of the shares over the period 2007-08 to 2011-12. These shares show a relatively small degree of variation over this period so using a central estimate should provide a good guide to future shares. The principal exception to this general rule is North Sea GDP forecasts, which are more difficult to predict.